

3.11 VISUAL RESOURCES, LIGHT, AND GLARE

3.11.1 Introduction

The visual resource analysis evaluates potential impacts from construction and operation of the proposed project, including the cogeneration facility and refinery interface, the 230-kV transmission facility, and modifications to Custer/Intalco Transmission Line No. 2. The analysis was based on the visual resource inventory and analyses reported in the ASC (BP 2002, Section 3.11) and a visual resources study for the Custer/Intalco transmission line prepared by URS (Appendix C). The evaluation of potential impacts on visual resources included the following activities:

- Compiling an inventory of existing visual quality,
- Identifying sensitive viewers and estimating their potential view of the proposed facilities (general visibility and distance zone),
- Describing visual changes introduced by the construction and operation of the facilities,
- Preparing visual simulations of the proposed facility from representative viewpoints,
- Assessing visual impacts from sensitive viewpoints, and
- Recommending mitigation measures for possible visual impacts.

The visual impact assessment considers the impacts to visual resources for the Proposed Action and No Action alternatives. Explanations of the methods used in the visual analyses are as follows:

Visual Quality Inventory

Topography, vegetation (size and shape), and developed land uses were reviewed using USGS quadrangle and project maps. Field reconnaissance was conducted to determine the general visibility of the project facilities and the reconstructed Bonneville transmission lines from the identified sensitive viewpoints (e.g., residences, travel routes, or other sensitive viewpoints). Visual impacts were assessed based on the visibility of change to the existing environment resulting from construction and operation of the project from sensitive viewpoints in relationship to the viewer type. Levels of visual impact are documented as high, moderate, or low.

Visual quality is the visual pattern created by the combination of natural character landscapes and industrial and man-made features. Visual quality was evaluated using the following descriptions:

- Urban/Industrial. Landscape is primarily human-made and affected by elements common to the built environment of urban/industrial areas. Human elements are prevalent or landscape modifications exist, which do not compatibly blend with the natural surroundings (low visual intactness and unity).
- Rural. The landscape consists of natural and human-made features/patterns, often the result of altering the landscape for farming, mineral extraction, or forestry. These areas may not be visually distinctive or unusual within the region. The landscape integrity of the area,

however, may provide positive visual experiences such as natural areas with some existing agricultural areas (farm fields, etc.), or well-maintained and landscaped residential areas.

- Natural. The landscape exhibits distinctive and memorable natural visual features (landforms, rock outcrops, etc.) and patterns (vegetation/open space) that are largely undisturbed, usually a rural or open space setting. Few human-made developments or disturbances are present.

Viewer Sensitivity

Viewer sensitivity is a component of the visual experience that estimates the importance to a viewer of features, conditions that affect visual perception, and social factors that contribute to viewer perceptions. Three types of viewers were considered: residents, workers, and travelers. Viewer sensitivity depends on viewer types and exposure (number of viewers and view frequency), view orientation and duration, and viewer awareness/sensitivity to visual changes. Levels of viewer sensitivity were evaluated using the following criteria:

- Low. Viewers in this group are focused on a work activity and not on the surrounding views. This category might include those who work in agriculture or industrial/warehouse settings. Compared with other viewer types, the number of low sensitivity viewers is generally considered small. Viewer activities typically limit awareness/sensitivity to the visual setting immediately outside the workplace.
- Moderate. Viewers in the moderate visual sensitivity group consist of highway and local travelers. The number of viewers varies depending on location; however, on average they tend to be moderately large based on overall densities of surrounding areas and highway commuters. Viewer awareness and sensitivity also are considered moderate because destination travelers often have a focused orientation.
- High. Residential, recreational, and other viewers congregating in public gathering places (churches, schools, etc.) are considered to have comparatively high visual sensitivity. Views may be of long duration and high frequency. In some cases, views may be perceived to affect property value.

Visual Simulations

Preparation of visual simulations included the following steps:

- Viewpoints were identified from which the projects might be visible. This was undertaken using professional judgment based on accepted methods of visual impact determination and evaluation and nearby public viewpoints.
- Photographs were taken of the existing topographic, vegetative, and human-made features.

Using the preliminary plans, building elevations, and photographs from various viewpoints, project features were illustrated using visual modeling within individual photographs to demonstrate how a particular view is likely to change following project construction, both for the cogeneration facility and the Bonneville transmission lines.

Visual Impact Assessment

Visual impacts relate to changes in available views of the landscape, and the effects of those changes on people. They arise from the changes in land use, the development or construction of buildings and structures, changes in land management, and less commonly, the changes in production processes and emissions. In addition, over the life of a project, different sources of impact occur at various stages during construction, operation, decommissioning, and restoration.

Potential impacts were subjectively evaluated based on a combination of contrasts between natural, rural, and urban/industrial levels of visual quality and the levels of viewer sensitivity. These guidelines show that high sensitivity and moderate visual quality change or moderate sensitivity and a high degree of visual quality change could be considered potentially significant. Where sensitivity and visual change are judged to be moderate or low, potential impacts are considered adverse, but not significant. If there is no change in visual quality or sensitivity, there is little or no assumed impact.

Distance from the proposed project was also considered. Table 3.11.1 summarizes how the visual impact is related to distance from the project site.

Table 3.11-1: Visual Impact Rating

Distance	0 – 0.5 mile		0.5 mile – 3 miles		3 miles or more	
Project	Project Site	Power Line	Project Site	Power Line	Project Site	Power Line
Visual Change	Moderate	Moderate	Moderate	Low	Low	Low
Viewer Sensitivity	Moderate	Moderate	Low	Low	Low	Low

3.11.2 Existing Conditions

Cogeneration Facility, Refinery Interface, and Transmission System

Landscape Setting

The proposed project is located on land formerly used for agriculture. Since the construction of the BP Cherry Point Refinery, the land has been left fallow except for the planting of hybrid poplar trees (see Section 3.6). The proposed project site is adjacent to and east of the refinery. The nearest community is Birch Bay, Washington, about 2 miles northwest of the site.

Grandview Road, a two-lane state highway, is located to the north of the proposed cogeneration facility. An approximately 340-foot vegetated buffer lies between the centerline of Grandview Road and the north fence line of the cogeneration facility site. The proposed project site would be entirely within the refinery property.

The refinery, other industrial uses, and agricultural activities characterize the built environment in the immediate project site. Large stands of evergreen and deciduous trees dominate the landscape to the east of the project site, screening views of the site from the east. To the north

across Grandview Road, a variety of habitat areas have been created and managed by the refinery. Some of these areas are intermittently used for cattle grazing and hay production. To the north beyond the fields, a narrow band of mixed deciduous and evergreen forest screens views of the site from residences to the north. To the northwest, the views are across fields that have constructed ponds, wetlands, and small stands of trees and shrubs. Jackson Road intersects Grandview Road about 1 mile west of the project site. About 0.25 mile north of this intersection along Jackson Road are a church and some residences. An existing Bonneville transmission line extends southwest from the Custer substation near I-5 to a point due east of the project site, then south toward the Alcoa Intalco Works.

Industrial operations of the refinery and Praxair are to the west and south. Forested areas and open fields are south of Aldergrove Road. These forested areas and other forested areas west of the refinery block views of the project site from the south and southwest outside of the Applicant's property.

The Strait of Georgia is located more than 2 miles from the proposed project site to the southwest. The entrance to Birch Bay State Park is located 1.9 miles to the northwest of the site. This park includes forests, wetlands, and a portion of the shoreline of Birch Bay. An important feature of the park is Terrell Creek marsh, a saltwater/freshwater estuary.

Southeast of the project site, stands of deciduous and coniferous trees block views of the project site from locations outside the Applicant's property. Lake Terrell and the 1,500-acre wildlife area managed by the Washington Department of Fish and Wildlife are almost 2 miles beyond this area to the southeast. The Lake Terrell area is popular for fishing and hunting. The Lake Terrell area is also an operating farm, with between 80 and 100 acres in use annually to produce winter food for waterfowl and upland game.

Visual Quality

The project site would be located in an industrial zone characterized by existing industrial development. The BP Cherry Point Refinery dominates the view from the project site looking west. Of the two other nearby industrial operations, Praxair can be seen to the south of the project site. Hybrid poplar trees screen the view of Chemco to the east (see Figure 3.11-1). The surrounding undeveloped land is relatively flat with some hybrid poplar tree stands, wetlands, and grasslands. The project site is bordered by existing roads and utility corridors on the north, west, and south.

Overall, the visual quality of the landscape setting would be classified as a mixture of urban/industrial and rural in character. The natural landscape features and patterns are not visually distinctive or unusual within the region, and industrial development is intermixed with this rural landscape. Visual integrity of the landscape is low in the project vicinity, due to the disturbed nature of the site, a mixture of vegetation types, and surrounding industrial developments, residences, and open space. The landscape does provide some positive visual experiences, however, such as adjacent natural areas and existing agricultural areas, primarily north of Grandview Road and east of Kickerville Road.

Custer/Intalco Transmission Line No. 2

Landscape Setting

The Bonneville transmission line lies between approximately 1/2 mile and 4 miles east of the project site. As such, it has similar relationships to local and regional features, but is set in a mosaic of farmland and mixed deciduous and evergreen forest. Several rural residences are scattered throughout the area. The existing Bonneville transmission line extends southwest from the Custer substation near I-5 through this area to a point due east of the project site, then south toward the Alcoa Intalco Works.

Visual Quality

In contrast to the project site, the Bonneville transmission line to be modified under Options 2a and 2b is located within a largely rural setting characterized by grazing, hay production, scattered farm buildings and residences, and forested areas.

Overall, the visual quality of the landscape setting would be classified as a mixture of urban/industrial, rural, and natural in character. The landscape features and patterns are not visually distinctive or unusual. Visual integrity of the landscape is slightly greater than the cogeneration facility area due to fewer industrial sites.

3.11.3 Impacts of the Proposed Action

Cogeneration Facility, Refinery Interface, and Transmission System

Construction

In general, visual impacts on the overall landscape setting resulting from construction at the cogeneration facility are expected to be low to moderate. The size of the facility (33 acres) is relatively small compared to existing and ongoing land disturbances created by the refinery. Prior to construction, some of the trees in the buffer zone on the south side of Grandview Road would be removed, leaving a partially unobstructed view of the facility for travelers along that road. Construction activities would be visible from this corridor on Grandview Road, but not visible from residential locations. The temporary visual impacts from construction of the transmission link to the Bonneville lines would likely be low to moderate. Farm buildings and a residence are located along Kickerville Road 500 feet east of the connection point between the transmission link and the Bonneville lines. Clearing of the corridor and installation of several towers could be viewed temporarily while the transmission link is under construction.

Operation

When construction is complete, the area along the south side of Grandview Road would be replanted with trees to help screen the site from the road. South of the replanted area would be a forested wetlands mitigation area. Once constructed, the cogeneration facility is expected to introduce low to moderate visual impacts, depending on the viewer type and viewing distance.

The facility would be visually compatible with the industrial development already existing at the refinery, Chemco, and Praxair. The form, color, and scale of buildings would be similar to nearby industrial/warehouse development.

Occasionally, a water droplet plume related to operation of the cooling tower at the facility may be visible. The visibility of the plume would depend on the ambient temperature and relative humidity. The cooling tower's location would partially mitigate the visibility of the plume. On a very cold day, it may be possible to see water vapor from the HRSG exhaust stacks because of the moisture in the flue gas condensing as it contacts and mixes with the cold air outside the stacks. Similar water vapor is produced by the refinery's existing boilers and heaters on cold days. Plumes would be seen from several locations as noted in the descriptions of the viewpoints.

Visual impacts related to the transmission towers and lines linking the cogeneration facility would likely be low. Only several towers would be visible within the context of forest and existing Bonneville towers.

Viewpoints

To analyze potential visual impacts, 15 locations were selected as viewpoints that might affect all three types of viewers. Figure 3.11-1 shows the location of the viewpoints. The following sections summarize the existing visual conditions and potential viewer sensitivity at each of the selected viewpoints. For the purposes of this subsection, the project includes the cogeneration facility and the refinery interface unless otherwise noted. The transmission systems, both the Bonneville lines and the connector from the Bonneville lines to the project, are treated as separate entities and only discussed where towers and lines would be visible from a particular viewpoint.

- Viewpoint 1 (Intersection of Brown and Kickerville Roads). This viewpoint was selected because it is near the closest residences and the Whitehorn Fire Hall. Views at this intersection currently include a pasture to the northwest, beyond which is a deeply forested area, a dairy to the northeast, and residences to the southeast and southwest. From this location, residents currently have no view of the refinery or location of the proposed project because of the forested area to the west of the viewpoint. The residents would be considered to have moderate sensitivity. However, there would be no visual impacts from this intersection.
- Viewpoint 2 (Intersection of Hewleg and Jackson Roads). This viewpoint was selected because it is the entrance to Birch Bay State Park and is near Beachwood Park. Currently, it is possible to see a portion of the stacks associated with the refinery (see Figure 3.11-2). Depending on the time of the year and the presence of vegetation, it may be possible to see upper portions of the proposed cogeneration facility and the water droplet plume from the cooling tower. The sensitivity of travelers at this location is moderate. Because the view of the proposed project site may be obscured by vegetation for much of the year from this location, it is considered to have low impacts. Construction impacts would also be low.
- Viewpoint 3 (Jackson Road and Birch Bay Community Church). The Birch Bay Community Church is located on Jackson Road. From the parking lot of the church, it is possible to see the higher elevation equipment at the refinery, and portions of the water droplet plume from

Figure 3.11-1

Figure 3.11-2: Existing and Simulated Views Viewpoint 2

the cooling tower may also be visible depending on meteorological conditions. The intervening vegetation is low grass up to Grandview Road, beyond which tall forested areas are present (see Figure 3.11-3). Based on the viewer type, traffic volume, and viewing range, visual sensitivity for visitors to the church or southbound travelers along this section of Jackson Road is considered moderate. Potential visual impacts are considered to be low. Construction impacts would also be low.

- Viewpoint 4 (Blaine Road North of the Project Site). This viewpoint is on Blaine Road, which is primarily used by local residents and people conducting business in the surrounding area. No residential development is present in this location. A viewer traveling south on Blaine Road would see the proposed project and transmission system at this location and would observe it for approximately 0.5 mile before stopping at the corner of Blaine Road and Grandview Road. At this intersection, the viewer would either turn east or west. If turning east, the viewer would continue to observe the proposed project and transmission system for approximately another 0.25 mile. This view would have the longest duration of all views of the project site, but since it is in an existing industrial setting and most viewers are traveling by automobile, the visual sensitivity is considered low. See Figure 3.11-4 for a visual representation from the corner of Blaine Road and Grandview Road.
- Viewpoint 5 (Intersection of Kickerville and Aldergrove Roads). This intersection was evaluated because from this viewpoint a traveler on both roads would see tall trees, power lines, various signs, and drainage features for the streets. No residential or industrial features are visible from this location. There would be no visual impacts, either from construction or operation, on travelers or residents in this location.
- Viewpoint 6 (Praxair Facility on Aldergrove Road). The primary view at this location is the Praxair operation next to Aldergrove Road. The dominant existing view from this location is of the refinery. The visual sensitivity for viewers, including travelers and employees of the industrial facilities, at this location is low. No significant visual impact from this location would occur during construction or operation.
- Viewpoint 7 (Intersection of Aldergrove and Jackson Roads). This location is approximately 8,000 feet from the proposed project at the southwest corner of the refinery's industrial boundary. The view from this location was evaluated because it is a public intersection where a traveler would stop; however, neither the refinery nor the proposed project site is visible at this location. The visual sensitivity of these travelers is low. No visual impact from this location would occur, either during construction or operation.
- Viewpoint 8 (Puget Sound Energy Peaking Station on the West Side of Jackson Road). Because of the extensive, tall vegetation on this portion of the refinery property, very few views of the refinery are possible from this viewpoint. Travelers on this road would primarily be involved with local industrial commerce. Therefore, the visual sensitivity of these travelers is low. Because the proposed project would not be visible from this location, no visual impact will occur either during construction or operation.
- Viewpoint 9 (Intersection of Grandview Road and Jackson Roads). This viewpoint was selected because it is a major intersection for travelers. Viewers at this location would be classified as moderately sensitive. From this location, the exhaust stacks of the refinery are not visible because of extensive, tall vegetation. Because the proposed project would not be visible from this location, no visual impact is anticipated during construction or operation.
- Viewpoint 10 (Intersection of Point Whitehorn and Grandview Roads). This viewpoint was selected because residences are present on the north side of Grandview Road at this location.

Viewers at this location would have a high sensitivity to visual impacts. Neither the refinery nor the proposed project site is visible from this viewpoint. Therefore, no visual impacts on travelers or residents are anticipated at this viewpoint, either during construction and operation.

- Viewpoint 11 (Main Entrance to Birch Bay State Park). Viewers at this location would have a high sensitivity to visual impacts. However, because of the trees present in the park, no structure outside the park, including structural features at the refinery and proposed project site, are discernible. Therefore, no visual impacts are anticipated at this location during construction or operation.
- Viewpoint 12 (Residential Development on Bay Road). This viewpoint is located at the residential development approximately 1 mile north of the proposed project site. Viewers at this location are of moderate sensitivity. The view from this location includes tall vegetation to the south and other features associated with residential development. No features of the refinery or of the proposed project site are visible at this location. Therefore, no visual impacts are anticipated at this location during construction and operation.
- Viewpoint 13 (Intersection of Bay and Kickerville Roads). This viewpoint is located approximately 1 mile northwest of the project site and was selected because of its proximity to residential areas. Travelers at this intersection may be recreational visitors, residents, and/or employees of the local industrial facilities. Because of the viewpoint location, viewers would have moderate sensitivity. Based on its distance from the site and the tall vegetation to the south and southwest, no features of the proposed project would be discernible. Therefore, no visual impacts are anticipated at this location during construction and operation.
- Viewpoint 14 (Intersection of Grandview Road and the Railroad Tracks). At this viewpoint, westbound travelers on Grandview Road slow down because of the railroad tracks and are close to the industrial operation of Chemco. Accordingly, viewers at this location are of moderate sensitivity. The refinery is not visible. However, with the construction of the proposed project, some of the tree line along the south side of Grandview Road may be removed. This tree removal would not likely make the refinery or the proposed project visible to viewers at this location. Therefore, no visual impacts are anticipated at this location during construction and operation.
- Viewpoint 15 (Kickerville Road between Brown and Grandview Roads). This viewpoint was selected because of its proximity to the proposed 230-kV transmission lines that would connect the cogeneration facility to Custer/Intalco Transmission Line No. 2. Viewers at this location are of moderate sensitivity. Travelers at this viewpoint can see barns to the south and the Chemco industrial plant to the north. Travelers would be able to see a tall transmission tower constructed to the east of the existing tree line (see Figure 3.11-5). The corridor would be partially obstructed by other trees and vegetation, depending on the location of the traveler. The refinery could be visible for very short durations. However, the proposed project would not be visible. During operation, the visual impact of the transmission system lines and towers at this location is considered to be low based on viewer sensitivity, distance, and the presence of pre-existing farm buildings and industrial structures. During construction, however, the visual impact may be considered moderate because of an increase in activity near the viewpoint. This increase would be related to construction and would likely consist of material stockpiles, construction-related traffic, and installation of new towers and lines. Construction-related impacts, however, would be temporary.

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Figure 3.11-3: Existing and Simulated Views Viewpoint 3

Figure 3.11-4: Existing and Simulated Views Viewpoint 4

Potential Impacts at Viewpoints

Table 3.11-2 summarizes visual impacts from each viewpoint where a potential impact was identified. Visual impacts from the development of the proposed project were evaluated at each of the viewpoints. As described in the individual discussions of the viewpoints, a majority of the viewpoints (1, 5, 6, 7, 8, 9, 10, 11, 12, 13, and 14), the proposed project would not have a significant impact because of low viewer sensitivity and obstructed views. For Viewpoint 4, a visual simulation of the cogeneration facility after construction is complete is provided. A description of the potential viewer impacts from the locations where the proposed project would be visible is summarized in the following sections.

Table 3.11-2: Summary of Visual Impacts from Representative Viewpoints

Viewpoint	Location	Visual Quality	Visual Sensitivity	Visual Impact
2	Intersection of Hewleg and Jackson Roads	Rural	Moderate	Low
3	Jackson Road at the Birch Bay Community Church	Rural and Urban/Industrial	Moderate	Low
4	Blaine Road north of the cogeneration facility	Urban/Industrial	Low	Moderate
15	Kickerville Road south of Chemco and near residence	Rural and Urban/Industrial	Moderate	Low

Low = Not Significant

Moderate = Minor Adverse, Not Significant

High = Potentially Significant

- **Viewpoint 2.** Several refinery exhaust stacks are currently visible. Views of the proposed project by travelers on Hewleg or Jackson roads at this intersection would be screened by the brush and trees present in the intervening space (see Figure 3.11-2). Given the presence of vegetation between the intersection and the cogeneration facility, the distance (0.5 to 3 miles), the dispersion of the cooling tower's water droplet plume, and the relative height of the HRSG exhaust stacks, the proposed project is not expected to have a significant impact on the moderately sensitive viewer. The overall visual impact of the project, both during construction and operation, would be low.
- **Viewpoint 3.** The view from the Birch Bay Community Church on Jackson Road would be altered by the HRSG exhaust stacks, the cooling tower's water droplet plume, and a portion of the cooling tower equipment visible at a distance of 7,000 feet (see Figure 3.11-3). However, the refinery exhaust stacks and some other facilities are currently visible from this location as can be seen in the existing view. Therefore, visual impacts to visitors at the church from construction and operation of the project would be low.
- **Viewpoint 4.** From the intersection of Blaine and Grandview roads, the proposed cogeneration facility would be visible because of its proximity to the road. Therefore, visual impacts on travelers using Blaine Road are estimated to be moderate or potentially significant both during construction and operation (see Figure 3.11-4) because the viewing distance is close to the road.

- **Viewpoint 15.** The 230-kV transmission line connection from the cogeneration facility to the existing Bonneville power grid would involve the installation of tall steel lattice towers, which would be located in a corridor through the forested area on the east side of the refinery-owned land. These structures would be visible to travelers along Kickerville Road along with the Chemco facility and from various barns and sheds associated with farm animals (see Figure 3.11-5). No other project-related structures would be visible. Based on the viewer type, traffic volume, and viewing range, visual impact related to the transmission towers for travelers along Kickerville Road would be low for operation and moderate for construction

Visual Contrast

During construction of the proposed project, grass and other vegetation would be stripped away as part of grading operations. This activity would be visible to travelers on Grandview or Blaine roads.

The heights of project components following construction are summarized in Table 3.11-3. Visible components would include the gas turbines, the steam turbine enclosure, liquid storage tanks, the electrical switchyard, the cooling tower, and the HRSG exhaust stacks. The components would be painted gray.

Once completed, the proposed project would appear to be similar to the adjacent refinery, thereby presenting little visual contrast. Metal buildings with vertical and horizontal elements, colors, and large proportional sizes would be similar to those constructed at the refinery site.

Table 3.11-3: Heights of Project Components

Structure	Height
Administration building	30 feet
Steam turbine enclosure	50 feet
Combustion turbine equipment	75 feet
Water tank (demineralization)	50 feet
Cooling tower	60 feet
HRSGs	95 feet
HRSG exhaust stacks	150 feet

Light and Glare

The area surrounding the cogeneration facility would be illuminated at night. Lighting would consist of low-level lighting around exit areas (minimum 2-foot candles) and general outside areas (0.2- to 5-foot candles) including ground-level operating areas, stairs and platforms, roadways, storage areas, and parking areas. This lighting would be provided for purposes of general operator access and safety under regular operating conditions. The precise number and placement of light fixtures have not yet been determined. However, outdoor lights would be a

Figure 3.11-5

combination of pole-mounted and structure-mounted lights. Outside lighting on the exterior of buildings and ancillary equipment would likely be placed above doorways. Lighting angles would vary depending on fixture wattage, light patterns, and light levels. No high-mast, wide-area lighting would be used.

Spot lighting would be provided to illuminate operating equipment, where needed. This lighting would be higher in intensity than general outside lighting (up to 10-foot candles), but would be limited to specific areas and occasional usage. This lighting could be adjusted to minimize light spillover or direct glare in response to specific site conditions.

Emergency lighting would be provided for workers to find exits and continue critical activities during power failures or emergency conditions. These instances are anticipated to be infrequent. Incandescent emergency lighting would be provided for the gas turbine, steam turbine, control room, and other operations buildings.

The steel HRSG exhaust stacks would be 150 feet high. This height would be below the aircraft lighting requirements of the Federal Aviation Administration (FAA). The stacks would have platform lighting at emission monitoring locations, which would only be used during equipment inspection and maintenance.

Light and glare impacts on neighboring properties are expected to be minimal. During the day, potential glare impacts would be minimal because of the planned use of non-reflective gray on exterior surfaces. The potential for adjusting light directions and the use of supplemental light shields/vegetation to provide additional screening, if necessary, would minimize light spillover at night. No glare impacts are anticipated for drivers on Grandview or Blaine roads. As an industrial land use, the cogeneration facility is expected to make a slight contribution to overall ambient light levels in the immediate vicinity. Because of the flat topography of the site, some lights may be seen by distant or elevated viewers. Overall, potential impacts from lighting would be negligible.

Custer/Intalco Transmission Line No. 2

A component of the cogeneration project is the interconnection with the existing Bonneville transmission system. One option known as the Remedial Action Scheme would involve installation of new electrical equipment at nearby substations. No visual impacts would occur as a result of this action. The other option would be to reconstruct Custer/Intalco Transmission Line No. 2 to safely handle the additional power generated by the cogeneration facility. Options 2a and 2b have been identified as part of the second option, and involve two types of towers. Under Option 2a, 120-foot-high, double-circuit steel lattice towers would be spaced 1,150 feet apart. Option 2b would involve the use of 120-foot-high, double-circuit steel poles spaced 900 feet apart. Either option would replace existing single-circuit steel lattice towers 85 feet high and 1,150 feet apart (Figure 1-2).

Viewer sensitivity along the route varies from low to high. Sensitivity of viewers is low in the area of the Custer substation at the east end of the project site. Low to moderate viewer

sensitivity occurs along Grandview Road south of the transmission lines. Viewer sensitivity is high at residences along the route where the transmission lines interrupt many of the views.

Construction

Impacts to visual quality would vary depending on viewer sensitivity. While temporary, impacts are likely to occur as a result of tower replacement, and would consist of construction equipment, material stockpiles, and temporary buildings on or adjacent to the site.

Operation

Option 2a

Under Option 2a, the use of larger double-circuit steel lattice towers may result in a slight increase in effects over the existing towers near residences because of their greater height.

Option 2b

The closer spacing of the double-circuit steel poles that would be used under this option may reduce the visual effects of individual towers, but the decreased spacing would result in a greater number of towers and may offer a slightly greater interruption of views than would the steel lattice towers.

Under either option, operational effects of tower and line replacement over most of the route would have little effect. Near residences, however, the visual effects of the new towers may increase slightly. Overall, the visual effects would be low.

Viewpoints

To analyze potential visual impacts of the transmission line modifications, four locations were selected as viewpoints that might affect all three types of viewers. Figure 3.11-1 shows the location of the viewpoints.

The following sections summarize the existing visual conditions and potential viewer sensitivity at each of the selected viewpoints. Photographs showing existing visual conditions and simulations of potential visual changes associated with the project are included in Appendix C.

- Viewpoint 16. This viewpoint is located where the transmission line crosses Blaine-Ferndale Road and was selected to represent low viewer sensitivity. The Custer substation and existing transmission lines are a prominent feature in the viewshed. Based on the viewer type, traffic volume, and viewing range and small viewsheds, visual impact related to the replacement of transmission towers for travelers along Blaine-Ferndale Road would be low for operation and moderate for construction (Appendix C, Figure A-2, top).
- Viewpoint 17. Although existing transmission lines interrupt north and east viewsheds, views are primarily of rural and natural features, pastoral landscapes with mountains in the distance. Based on viewer type, viewing range, and quality of the view, the visual effects

from the project could be high. Because transmission lines are already visible from this viewpoint, the project would have a low visual impact (Appendix C, Figure A-2, bottom).

- Viewpoint 18. Existing transmission lines also interrupt the view west from the Bannerman property, and views are primarily of rural pastoral landscapes. Based on viewer type, viewing range, and quality of the view, the visual effects from the project, as with Viewpoint 17, could be high. Because transmission lines are already visible from this viewpoint, the project would have a low visual impact (Appendix C, Figure A-3, top).
- Viewpoint 19. Viewer sensitivity along Grandview Road is low to moderate as a result of the transmission lines being intermittently visible only from about 60% of the road. Views from the road encompass rural and urban industrial features. As a result, low visual impacts on travelers from the project would be expected (Appendix C, Figure A-3, bottom).

Potential Impacts at Viewpoints

Visual impacts from the implementation of the proposed tower replacement were evaluated at each of the viewpoints. Slight increases in effects above existing conditions could occur. See Appendix C for simulated views of potential visual changes along the corridor.

Visual Contrast

During construction of the proposed project, removal of grass and other vegetation may occur as part of gaining vehicle access to towers. This activity may be visible to travelers on Grandview Road, Kickerville Road, Blaine-Ferndale Road, and several minor roads in the area. Stockpiles of construction materials may be placed in areas where none now exist. It is unknown if helicopters would be used as part of the tower and line replacement effort.

Once completed, the proposed towers would appear to be similar to conditions existing prior to tower replacement, thus presenting little visual contrast.

Light and Glare

Because the new towers would not be lighted, no effects from light and glare would occur.

3.11.4 Impacts of No Action

Under the No Action Alternative, the proposed project would not be constructed and existing views of the project site would be maintained. However, at some time in the future, views to the site could be altered when the hybrid poplar trees are harvested. Light and glare levels would remain the same as existing conditions. Because the land is zoned for industrial uses, future industrial development on the project site would likely occur.

3.11.5 Secondary and Cumulative Impacts

When completed, the proposed project will be visually similar to the refinery that has been present on the site for over 30 years. This development will appear as an extension of the existing refinery with an additional water droplet plume, fencing, signs, roadwork, and

landscaping. Because the area surrounding the project site is also zoned for industrial uses, additional development could be anticipated in the future.

In designating the land for industrial uses, Whatcom County considered the visual impact of future industrial development. In its zoning ordinance, the County requires all new development be set back from public roads. By complying with the zoning regulations, future industrial development will minimize cumulative visual impacts on workers, travelers, and residents in the area.

The Applicant has considered cumulative visual impacts by limiting its industrial development to the area south of Grandview Road near the existing refinery complex. The refinery-owned land north of Grandview Road has retained its rural character. The Applicant intends to use this area for wetlands and other environmental mitigation.

3.11.6 Mitigation Measures

To avoid visual impacts at the closest public viewpoints along Grandview and Blaine roads, the Applicant would undertake the following:

- Prepare and implement a site management plan to minimize overall visual impacts associated with construction of the proposed project.
- Cogeneration project elements would be painted gray. This color is intended to reduce surface glare from direct sunlight.
- The cogeneration facility would be located approximately 340 feet south of the centerline of Grandview Road, creating opportunities to plant screening trees, shrubs, and vines consistent with final approved landscape designs. In addition, existing trees between the road and the site would remain, based on the project description.
- Project site lighting would be designed to minimize light spillover and glare.

3.11.7 Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts on visual resources are identified.